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UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Egbert Classen et al
Application Number: 10/565,695
Filing Date: 01/23/2006
Group Art Unit: 3749
Examiner: Jiping Lu
Title: METHOD FOR OPERATING AN APPLIANCE
COMPRISING AT LEAST ONE DRYING CYCLE

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT A

Dear Sir:

This Amendment responds to the Office Action dated January 10, 2007.
Please charge Deposit Account No. 502786 for any deficiency or overpayment.

Please amend the application as follows:

Amendments to the Specification begin on Page 2 of this paper;
Amendments to the Drawings begin on Page 6 of this paper;
Amendments to the Claims, as reflected in the listing of claims, begin on Page 7 of this paper; and
Remarks begin on Page 9 of this paper.

AMENDMENTS TO THE SPECIFICATION:

On Page 1, before line 1, insert the following:

--Background of the Invention --

On Page 2, after line 30, insert the following:

--Brief Summary of the Invention --

On Page 7, after line 26, insert the following:

--Brief Description of the Drawings

The invention is explained in detail hereinafter with reference to an exemplary embodiment of a dishwasher according to the invention shown in the drawings. In the sole figure of the drawings:

Fig. 1 is a schematic view of a dishwasher according to the invention with a perpendicularly arranged heat tube whose mode of action runs from top to bottom.

Detailed Description of the Present Invention

The sole figure of the drawings Figure 1 shows an embodiment of the dishwasher 1 according to the invention comprising a washing container 2 wherein crockery baskets not shown for placing items to be washed, which are

not shown, are arranged. This dishwasher 1 has a vertically arranged heat tube 10 whose mode of action runs from top to bottom.

According to the invention, the dishwasher 1 comprises a conduit system 4 connected in an air-conveying manner to a washing container 2 wherein both ends 11, 12 of at least one heat tube 10 protrude, said heat tube 10 being used, as is described in detail further below, on the one hand for cooling and thereby drying air from the washing container 2 introduced along an inlet path A and on the other hand for heating air passed through from the washing container 2 into the heat tube 10.

The washing container 2 has an outlet 3 which leads to the conduit system 4 comprising a pipe 5 communicated with an upstream end 11 of the heat tube 10, a heat tube pipe 6 extending from the upstream end 11 of the heat tube 10 to a downstream end 12 of the heat tube 10, and an outlet pipe 7 extending from the downstream end 12 of the heat tube 10 to an inlet 8 of the washing container 2, wherein located between the pipe 5 and the upstream end 11 of the heat tube 10 is a fan 9 that supplies at least some of the air in the washing container 2 to the conduit system 4 at least temporarily.

In the closed air system any exchange of contaminated air from the surroundings is completely eliminated, preventing any back contamination of the items to be treated.

A heater 15 is arranged in the outlet pipe 7 from the other end 12 of the heat tube 10 to an inlet 8 of the washing container 2. Should the heating of the air by the heat tube 10 not be sufficient, the air is additionally heated by the heater 15 to ensure the drying function. Despite the additional energy consumption for the

heater 15, a saving of energy is achieved compared with the prior art described previously.

A condenser 16 is arranged in the pipe 6 between the upstream end 11 of the heat tube 10, which forms the "cold side" of the heat tube 10 and the downstream end 12 of the heat tube 10, which forms the "warm side" of the heat tube 10. Alternatively, it is also possible to have an arrangement of the condenser in the pipe at one end of the heat tube 10 – namely, at the "cold side" of the heat tube. The heat tube 10 has an internal capillary structure which makes it possible for a filled working fluid not described in detail to rise from the "warm side" to the "cold side" of the heat tube 10. Should the removal of moisture from the air by the heat tube 10 not be sufficient, the air is additionally passed to the condenser 16 which makes up for the deficient removal of moisture to ensure the drying function. The condenser 16 is in thermal contact with the surroundings.

The dishwasher 1 has a washing method whose programme run consists of at least one partial programme step "pre-wash", a partial programme step "clean", at least one partial programme step "intermediate rinse", a partial programme step "clear rinse" and a partial programme step "dry". According to the invention and in the exemplary embodiments explained, during the "dry" partial programme step, air from the washing container 2 is passed through the conduit system 4, and back into the washing container 2. The fan 9 is switched on for this purpose. The air path is indicated by the arrows A, B and C. On the "cold side" of the heat tube 10 a large amount of thermal energy is removed from the air passed by the fan 9 via the pipe 5 to upstream end 11 – i.e., the "cold side" of the heat tube 10 – so that this air is very severely cooled and, since the cold air has a substantially lower moisture absorption capacity, a large fraction of the moisture condenses. Heat conducting fins 13 are provided for good heat conduction of the air to the

heat tube 10. The heat tube 10 passes the heat removed from the moist air (sensible heat) and the heat produced by the condensation (latent heat) to its downstream end 12, the "warm side" of the heat tube 10. The now very dry air passes via the pipe 6 from the upstream end 11 of the heat tube 10 to the downstream end 12 of the heat tube 10 and is heated there. Heat conducting fins 14 are provided for good heat conduction from the heat tube 10 to the air. The now heated and very dry air is now passed via the pipe 7 from the downstream end 12 of the heat tube 10 to the inlet 8 of the washing container 2 and thus back into the washing container 2. The heated air introduced into the washing container 2 is now substantially drier and has a high absorption capacity for moisture. It rises upwards in the washing container 2 and absorbs the residual moisture on the objects to be washed. As has already been described above, it is now fed back to the heat tube 10.

As a result of using the heat tube 10, the items to be treated only require substantially less heating compared with the prior art, in the exemplary embodiments described only by about 50°C or even less in the "clear rinse" partial programme step. This means a substantial saving of energy. As a result of heating the air, its moisture absorption capacity is increased again on each passage through the conduit system 4 which results in an improved drying result and/or shortening of the drying time. --

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Amendment to the Drawings:

Please enter the enclosed new Figure 1 into the record.